



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Mr. Larry Lawson, Director
Division of Water Program Coordination
Virginia Department of Environmental Quality
629 Main Street
Richmond, VA 23219

Dear Mr. Lawson:

The Environmental Protection Agency (EPA) Region III is pleased to approve the Total Maximum Daily Loads (TMDLs) for the primary contact use (bacteria) impairments on Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch. The TMDLs report was submitted to EPA for review in February 2004. The TMDLs were established and submitted in accordance with Section 303(d)(1)(c) and (2) of the Clean Water Act to address impairments of water quality as identified in Virginia's 1998, Section 303(d) list.

In accordance with Federal regulations at 40 CFR §130.7, a TMDL must comply with the following requirements: (1) designed to attain and maintain the applicable water quality standards, (2) include a total allowable loading and as appropriate, wasteload allocations (WLAs) for point sources and load allocations for nonpoint sources, (3) consider the impacts of background pollutant contributions, (4) take critical stream conditions into account (the conditions when water quality is most likely to be violated), (5) consider seasonal variations, (6) include a margin of safety (which accounts for uncertainties in the relationship between pollutant loads and instream water quality), (7) consider reasonable assurance that the TMDL can be met, and (8) be subject to public participation. The enclosure to this letter describes how the TMDLs for the primary contact use impairments satisfy each of these requirements.

Following the approval of the TMDL, Virginia shall incorporate the TMDLs into the Water Quality Management Plan pursuant to 40 CFR § 130.7(d)(2). As you know, all new or revised National Pollutant Discharge Elimination System permits must be consistent with the TMDL WLA pursuant to 40 CFR §122.44 (d)(1)(vii)(B). Please submit all such permits to EPA for review as per EPA's letter dated October 1, 1998.



If you have any questions or comments concerning this letter, please don't hesitate to contact Mr. Thomas Henry at (215) 814-5752.

Sincerely,

Jon M. Capacasa, Director
Water Protection Division

Enclosure



Printed on 100% recycled/recyclable paper with 100% post-consumer fiber and process chlorine free.

Customer Service Hotline: 1-800-438-2474

Decision Rationale for the
Total Maximum Daily Loads for
the Primary Contact Use (Bacteriological) Impairments on
Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch

I. Introduction

The Clean Water Act (CWA) requires a Total Maximum Daily Load (TMDL) be developed for those water bodies identified as impaired by a state where technology-based and other controls will not provide for attainment of water quality standards. A TMDL is a determination of the amount of a pollutant from point, nonpoint, and natural background sources, including a margin of safety (MOS), that may be discharged to a water quality-limited water body.

This document will set forth the Environmental Protection Agency's (EPA) rationale for approving the TMDLs for the primary contact use (bacteriological) impairments on Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch. EPA's rationale is based on the determination that the TMDLs meet the following eight regulatory conditions pursuant to 40 CFR §130.

- 1) The TMDLs are designed to implement applicable water quality standards.
- 2) The TMDLs include a total allowable load as well as individual waste load allocations and load allocations.
- 3) The TMDLs consider the impacts of background pollutant contributions.
- 4) The TMDLs consider critical environmental conditions.
- 5) The TMDLs consider seasonal environmental variations.
- 6) The TMDLs include a margin of safety.
- 7) There is reasonable assurance that the TMDLs can be met.
- 8) The TMDLs have been subject to public participation.

II. Background

The Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch watersheds are located in Wise County, Virginia. The watersheds are 5,600, 7,000, 3,500 and 1,700-acres in size respectively. The impaired segments are 2.6, 11.6, 4.6, and 2.43 miles in length respectively. The impairment for all of these waters start at their headwaters and continue to their confluence with the Guest River. Forested lands make up the majority of the landuses within each watershed. Forested lands account for 60% of the watershed in Sepulcher Creek, 58% of the watershed in Toms Creek, 64% of the watershed in Little Toms Creek, and 72% of the watershed in Crab Orchard Branch. Abandoned strip mines are the next largest landuse in the watershed and make-up 12% of the lands in Sepulcher Creek and Toms Creek, 13% of the lands in Little Toms Creek and 3% of the lands in Crab

Orchard Creek. Residential lands are the third largest landuse and account for 7% of the Sepulcher Creek watershed, 10% of the Toms Creek Watershed, 13% of the Little Toms Creek Watershed, and 16% of the Crab Orchard Creek Watershed.

In response to Section 303(d) of the CWA, the Virginia Department of Environmental Quality (VADEQ) listed Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch (VAS-P11R) on Virginia's 1998 Section 303(d) list as being unable to attain their primary contact use due to violations of the bacteriological criteria. This decision rationale will address the TMDLs for the primary contact use impairments on these waters.

Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch were listed for violations of Virginia's fecal coliform water quality criteria. Fecal coliform is a bacterium which can be found within the intestinal tract of all warm blooded animals. Therefore, fecal coliform can be found in the fecal wastes of all warm blooded animals. Fecal coliform in itself is not a pathogenic organism. However, fecal coliform indicates the presence of fecal wastes and the potential for the existence of other pathogenic bacteria. The higher concentrations of fecal coliform indicate the elevated likelihood of increased pathogenic organisms.

EPA has been encouraging the states to use e-coli and enterococci as the indicator species instead of fecal coliform. A better correlation has been drawn between the concentrations of e-coli and enterococci, and the incidence of gastrointestinal illness. The Commonwealth adopted e-coli and enterococci criteria in 2002. Streams are evaluated via the e-coli and enterococci criteria after 12 samples have been collected using these indicator species. Twelve e-coli samples have been collected from each of these streams. Therefore, compliance with the primary contact use is now based upon the e-coli criteria.

As Virginia designates all of its waters for primary contact, all waters must meet the current bacteriological standard for primary contact. Virginia's standard applies to all streams designated for primary contact for all flows. The new e-coli criteria requires a geometric mean concentration of 126 colony forming units (cfu)/100mL of water with no sample exceeding 235 cfu/100 mL of water. Unlike the fecal coliform criteria which now allows for a 10% violation rate the new e-coli criteria requires the concentration of e-coli not exceed 235 cfu/ 100mL of water. Although, the TMDL and criteria require the 235 cfu/100 mL of water not to be exceeded waters are not placed on the Section 303(d) list if their violation rate does not exceed 10%.

The TMDLs submitted by Virginia are designed to determine the acceptable load of e-coli which can be delivered to the impaired waters, as demonstrated by the load-duration approach. The load-duration approach is considered an appropriate method to analyze the impaired waters through its analysis and comparison of observed flows, in-stream bacteria concentrations, and the numeric water quality criteria.

The load-duration approach analyzes the stream's entire flow record to find a correlation between flow regimes and bacteriological concentrations. The load-duration approach uses flow data collected by a local gaging station, in this instance the United States Geological Survey (USGS) gage 3524000 was used for the TMDL development process. This gage is located on the Clinch River. The Guest River, which Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch are tributaries of, is a tributary to the Clinch River. The Clinch River is a much larger water than Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch. Therefore, a regression was drawn between the observed flow data at the USGS gage and grab flow samples taken from the impaired waters. Flow measurements were taken at the mouth of each of the impaired segments from late 2002 through early 2003.

The measurement data from the stream gages were entered into Excel spreadsheets along with daily mean flow data from nearby, long term, continuous record gaging stations.¹ Using Excel data analysis tools the impaired watersheds flow was correlated to the observed data from the USGS gage. USGS gage 3524000 was selected and used to predict the flow patterns for the impaired streams since its data produced a high correlation and it had comparable topography and watershed characteristics.² The flow data from the impaired waters were plotted against the daily mean flow data from USGS gage 3524000. Excel plotted a best fit line through the data and developed a regression equation for the relationship. Once the regression equation was developed a flow for the impaired watershed could be ascertained for any flow observed at gage 3524000.

Through the use of the regression equation a flow record could be formed for all of the impaired waters. A flow record is essential to the load duration approach, as the flow determines the allowable loading (load that will allow the stream to attain criteria) and the observed loading. For each flow along the load-duration curve the allowable load can be determined by multiplying the numeric criteria (235 cfu/100ml) by the flow. The observed loads were determined by multiplying the observed concentrations by the simulated flow for that time. In order to insure that the TMDL was protective of all flow conditions, it was developed to the instance when the difference between the observed and allowable loadings was greatest. This process describes the first step in the development of the TMDL. The load duration approach was not developed for the geometric mean criteria as it is not a dynamic model that can predict the flow and load conditions associated with multiple monitoring events. However, the reductions were based on the largest exceedance of the instantaneous criteria and are to be applied to all flows. The reductions required to bring the largest violation into compliance are being applied to flows that are already in compliance and those which are not as severely impaired as well. Like all modeling efforts there is uncertainty in this model, but it is hoped that by modeling to the greatest observed violation the TMDL will attain all criteria.

¹VADEQ, March 2004, "Bacteria TMDLs for Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch

²Ibid 1

The next step of the TMDL was to determine what organisms or sources are responsible for the pollutant loading to the stream. Since e-coli, like fecal coliform, is associated with warm blooded animals as mentioned above, it was necessary to determine which animals were providing the bacteria loadings to the impaired waters. Through a process known as bacterial source tracking (BST), VADEQ was able to breakdown the source of bacteria into four categories. The four categories were human, pets, livestock, and wildlife. Three of these four sources are anthropogenic in origin and can be controlled via a variety of techniques. Wildlife, which may be attracted to certain areas due to anthropogenic modifications to the watershed is considered a natural source of bacteria.

The BST approach used by VADEQ is known as the Antibiotic Resistance Approach (ARA). ARA measures the bacteria's resistance to a suite of antibiotics. The assumption is that bacteria associated with humans will have the highest resistance to antibiotics due to previous exposures to antibiotics. Livestock and pets would have the next highest resistance, while wildlife would exhibit the least resistance. In order to conduct this work, waste samples from known sources had to have their resistance measured, this information was placed into a library. The resistance of the bacteria collected in water samples was compared to the data in the library to determine its source. For additional information on the ARA please refer to Appendix B of the TMDL.

The data collected in steps one and two were then combined to determine the impact of the sources to water quality in the impaired waters. VADEQ collected one year of BST samples from the water, for each sample VADEQ determined the bacterial concentration and the percent loading derived from each source. The percent loading for each source category was averaged over the annual period and this average percent loading was used to determine the loading for each source.

In the Sepulcher Creek TMDL, the highest bacteria violation occurred during a flow of approximately 1.8 cubic feet per second (cfs). The e-coli load for this flow event was $11.5\text{E}+12$ cfu/year. The allowable load at this same flow was $3.30\text{E}+12$ cfu/year. This represents a 71% reduction in loadings. The BST data demonstrated that livestock, pets, humans, and wildlife represented 15, 24, 31 and 30 percent of the load respectively. Therefore, it was determined that all sources must be reduced.

In the Toms and Little Toms Creek TMDL, the highest bacteria violation occurred during a flow of approximately 10.2 cubic feet per second (cfs). The e-coli load for this flow event was $1.64\text{E}+14$ cfu/year. The allowable load at this same flow was $2.56\text{E}+13$ cfu/year. This represents a 84% reduction in loadings. The BST data demonstrated that livestock, pets, humans, and wildlife represented 17, 17, 37, and 30 percent of the load respectively. Therefore, it was determined that all sources must be reduced.

In the Crab Orchard Branch TMDL, the highest bacteria violation occurred during a flow of approximately 0.9 cfs. The e-coli load for this flow event was $1.74\text{E}+14$ cfu/year. The allowable load at this same flow was $9.98\text{E}+12$ cfu/year. This represents a 94% reduction in loadings. The BST data

demonstrated that livestock, pets, humans, and wildlife represented 27, 21, 18, and 34 percent of the load respectively. Therefore, it was determined that all sources must be reduced.

Through the development of this and other similar TMDLs, it was discovered that natural conditions (wildlife contributions to the streams) could cause or contribute to violations of the bacteria criteria. BST sampling data collected on Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch indicated that bacteria from wildlife represents approximately 30 percent of the load. Many of Virginia's TMDLs, including the TMDLs for Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch, have called for some reduction in the amount of wildlife contributions to the affected streams. EPA believes that a reduction in wildlife is not practical and will not be necessary due to the implementation plan discussed below.

A phased implementation plan will be developed for all streams in which the TMDL calls for reductions in wildlife. In Phase 1 of the implementation, the Commonwealth will begin implementing the reductions (other than wildlife) called for in the TMDL. In Phase 2, which can occur concurrently to Phase 1, the Commonwealth will consider addressing its standards to accommodate this natural loading condition. The Commonwealth has indicated that during Phase 2, it may develop a Use Attainability Analysis (UAA) for streams with wildlife reductions which are not used for frequent bathing. Depending upon the result of the UAA, it is possible that these streams could be designated for secondary contact.

After the completion of Phase 1 of the implementation plan, the Commonwealth will monitor the stream to determine if the wildlife reductions are actually necessary, as the violation level associated with the wildlife loading may be smaller than the percent error of the model. In Phase 3, the Commonwealth will investigate the sampling data to determine if further load reductions are needed in order for these waters to attain standards. If the load reductions and/or the new application of standards allow the stream to attain standards, then no additional work is warranted. However, if standards are still not being attained after the implementation of Phases 1 and 2, further work and reductions will be warranted. It should be noted that VADEQ averaged the percent loads associated with each BST sample, which removed the magnitude of loading from the source analysis. This method increased the weight of the wildlife loading in the Toms Creek and Little Toms Creek watersheds. However, it decreased the weight of wildlife loadings in Sepulcher Creek and Crab Orchard Branch. The state could have calculated the loading from wildlife by averaging the monthly loadings for each source and dividing this by the average concentration. VADEQ will be evaluating the differences between the two source assessment methods.

Table 1 - Summarizes the Specific Elements of the TMDLs.

Segment	Parameter	TMDL (cfu/yr)	WLA (cfu/yr)	LA (cfu/yr)	MOS
Sepulcher Cr.	E-coli	3.19E+12	1.39E+10	3.17E+12	Implicit
Toms Creek	E-coli	2.56E+13	2.78E+10	2.56E+13	Implicit
Little Toms Creek	E-Coli	8.52E+12	1.04E+10	8.51E+12	Implicit
Crab Orchard	E-Coli	9.98E+12	0	9.98E+12	Implicit

The United States Fish and Wildlife Service has been provided with copy of this TMDL.

III. Discussion of Regulatory Conditions

EPA finds that Virginia has provided sufficient information to meet all of the eight basic requirements for establishing primary contact (bacteriological) impairment TMDLs for Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch. EPA is therefore approving these TMDLs. EPA's approval is outlined according to the regulatory requirements listed below.

1) The TMDLs are designed to meet the applicable water quality standards.

Virginia has indicated that excessive levels of bacteria from both anthropogenic and natural sources have caused violations of the water quality criteria and designated uses in the Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch Watersheds. The water quality criterion for fecal coliform was a geometric mean 200 cfu/100mL or an instantaneous standard of no more than 1,000 cfu/100ml. Two or more samples over a 30 day period are required for the geometric mean standard. The Commonwealth has changed its bacteriological criteria as indicated above. The new e-coli criteria require a geometric mean of 126 cfu/100mL of water with no sample exceeding 235 cfu/100 ml.

The load-duration approach, described above was used by the Commonwealth for the development of the Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch TMDLs. This approach uses the flow data from a USGS gage, in-stream water quality data, a regression equation, and BST data to quantify the bacteria loading and the sources responsible for that loading. The load-duration approach in this instance developed a flow record for the impaired reaches based on observed flow data on the Clinch River. For each flow along the load-duration curve the allowable load can be determined by multiplying the numeric criteria by the flow. The observed loads were determined by multiplying the observed concentrations by the flow that was observed at that time. In order to insure that the TMDL was protective of all flow conditions, it was developed for the flow that exhibited the greatest difference between the observed and allowable loadings.

Through the use of BST, VADEQ was able to breakdown the sources of bacteria into four

categories. The four categories of bacteria sources were human, pets, livestock, and wildlife. Three of these four sources are anthropogenic in origin and can be controlled via a variety of techniques. Wildlife, which may be attracted to certain areas due to anthropogenic reasons is considered a natural source of bacteria.

VADEQ collected one year of BST samples from the water. VADEQ determined the bacterial concentration and the percent loading derived from each source for each sample. The percent loading for each source category was averaged over the annual period. This average percent loading was used to determine the loading for each source.

2) The TMDLs include a total allowable load as well as individual waste load allocations and load allocations.

Total Allowable Loads

Virginia indicates that the total allowable loading is the sum of the loads allocated to land based precipitation driven nonpoint source areas (forest and agricultural land segments) and point sources. Activities that increase the levels of bacteria to the land surface or their availability to runoff are considered flux sources. The actual value for total loading can be found in Table 1 of this document. The total allowable load is calculated on an annual basis.

Waste Load Allocations

There are eight point sources of bacteria to Sepulcher Creek. All of these facilities are single family home treatment units and are covered by a general permit. These facilities are permitted to discharge 1,000 gallons per day with an e-coli concentration of 126 cfu/100mL. The WLA for these facilities can be determined by multiplying the daily flow times the daily load by 365. The Toms Creek and Little Toms Creek watershed has 16 single family treatment units and one individual National Pollutant Discharge Elimination System (NPDES) permitted facility. The single family units are permitted like the facilities in the Sepulcher Creek watershed. The other facility is not permitted to discharge e-coli and therefore has no waste load allocation (WLA). There are no permitted facilities in the Crab Orchard Branch Watershed.

EPA regulations require that an approvable TMDL include individual WLAs for each point source. According to 40 CFR 122.44(d)(1)(vii)(B), "Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with assumptions and requirements of any available WLA for the discharge prepared by the state and approved by EPA pursuant to 40 CFR 130.7." Furthermore, EPA has authority to object to the issuance of any NPDES permit that is inconsistent with the WLAs established for that point source.

Table 2 - Bacteriological (E-Coli) WLAs for Sepulcher Creek and Toms Creek

Stream	Facility Name	Permit Number	Allocated Load (cfu/yr)
Sepulcher Creek	Single Family Unit (SFU)	VAG400267	1.74E+9
Sepulcher Creek	SFU	VAG400.48	1.74E+9
Sepulcher Creek	SFU	VAG400289	1.74E+9
Sepulcher Creek	SFU	VAG400449	1.74E+9
Sepulcher Creek	SFU	VAG400454	1.74E+9
Sepulcher Creek, UT	SFU	VAG400427	1.74E+9
Sepulcher Creek, UT	SFU	VAG400255	1.74E+9
Sepulcher Creek, UT	SFU	VAG400348	1.74E+9
Toms Creek	SFU	VAG400197	1.74E+9
Toms Creek	SFU	VAG400246	1.74E+9
Toms Creek	SFU	VAG400247	1.74E+9
Toms Creek	SFU	VAG400301	1.74E+9
Toms Creek	SFU	VAG400419	1.74E+9
Toms Creek	SFU	VAG400300	1.74E+9
Toms Creek, UT	SFU	VAG400390	1.74E+9
Toms Creek, UT	SFU	VAG400393	1.74E+9
Toms Creek, UT	SFU	VAG400294	1.74E+9
Little Toms Creek	SFU	VAG400467	1.74E+9
Little Toms Creek	SFU	VAG400305	1.74E+9
Little Toms Creek, UT	SFU	VAG400357	1.74E+9
Little Toms Creek, UT	SFU	VAG400433	1.74E+9
Little Toms Creek, UT	SFU	VAG400457	1.74E+9
Little Toms Creek, UT	SFU	VAG400362	1.74E+9

Load Allocations

According to Federal regulations at 40 CFR 130.2(g), load allocations (LAs) are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting loading. Wherever

possible, natural and nonpoint source loads should be distinguished. The load-duration approach used BST data to determine the bacteria load from each source.

Table 3 - LA for Bacteria (E-Coli) for Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch

Source Category	Sepulcher Creek		Toms Creek		Crab Orchard Creek	
	Existing (cfu/yr)	Allocated (cfu/yr)	Existing (cfu/yr)	Allocated (cfu/yr)	Existing (cfu/yr)	Allocated (cfu/yr)
Livestock	3.45E+12	1.00E+12	6.01E+13	9.62E+12	3.13E+13	0.19E+13
Pets	2.70E+12	0.78E+12	3.72E+13	4.35E+12	3.65E+13	0.19E+13
Human	1.64E+12	0.48E+12	2.79E+13	4.46E+12	4.70E+13	0.28E+13
Wildlife	3.30E+12	0.96E+12	4.88E+13	7.81E+12	5.92E+13	0.36E+13

3) The TMDLs consider the impacts of background pollution.

The TMDLs consider the impact of background pollutants by considering the bacterial load from natural sources such as wildlife.

4) The TMDLs consider critical environmental conditions.

According to EPA's regulation 40 CFR 130.7 (c)(1), TMDLs are required to take into account critical conditions for stream flow, loading, and water quality parameters. The intent of this requirement is to ensure that the water quality of the impaired creeks is protected during times when it is most vulnerable.

Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards³. Critical conditions are a combination of environmental factors (e.g., flow, temperature, etc.), which have an acceptably low frequency of occurrence. In specifying critical conditions in the waterbody, an attempt is made to use a reasonable "worst-case" scenario condition. This was addressed in the Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch TMDLs by modeling the reductions to the flow that exhibited the greatest

³EPA memorandum regarding EPA Actions to Support High Quality TMDLs from Robert H. Wayland III, Director, Office of Wetlands, Oceans, and Watersheds to the Regional Management Division Directors, August 9, 1999.

disparity between observed and allowable concentrations.

5) The TMDLs consider seasonal environmental variations.

Seasonal variations involve changes in stream flow and loadings as a result of hydrologic and climatological patterns. The loadings to Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch were investigated on a monthly basis to determine if seasonality existed between the sources. Based on the BST results it was determined that there was minimal seasonal impacts to loading and the source loads were averaged on an annual basis.

6) The TMDLs include a margin of safety.

This requirement is intended to add a level of safety to the modeling process to account for any uncertainty. The MOS may be implicit, built into the modeling process by using conservative modeling assumptions, or explicit, taken as a percentage of the WLA, LA, or TMDL. Virginia included an implicit MOS in the TMDLs through the use of conservative modeling assumptions. Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch were modeled to the single-most extreme water quality violation event and applied the reductions necessary during that event to all conditions.

7) There is a reasonable assurance that the TMDLs can be met.

EPA requires that there be a reasonable assurance that a TMDL can be implemented. WLAs will be implemented through the NPDES permit process. According to 40 CFR 122.44(d)(1)(vii)(B), the effluent limitations for an NPDES permit must be consistent with the assumptions and requirements of any available WLA for the discharge prepared by the state and approved by EPA. Furthermore, EPA has authority to object to issuance of an NPDES permit that is inconsistent with WLAs established for that point source.

Nonpoint source controls to achieve LAs can be implemented through a number of existing programs such as Section 319 of the CWA, commonly referred to as the Nonpoint Source Program.

8) The TMDLs have been subject to public participation.

The TMDLs for Sepulcher Creek, Toms Creek, Little Toms Creek and Crab Orchard Branch were subject to the Commonwealth's public participation process. The meetings and comment periods for these TMDLs were public noticed in the Virginia Register. The first public meeting was held on October 17, 2002 in Tacoma, Virginia. A thirty-day public comment period was opened as well. Twenty-seven people attended this initial meeting. The second public meeting was held on January 26, 2004 and opened to a thirty day comment period. Thirty-eight people attended this meeting and one written comment was received.